The plaintiff claimed that what is known as pool level of the river, or the lowest stage to which the fixed dam will permit the water to fall (6.5 feet at Nashville), is ordinary low water. The defendant claimed that ordinary low-water mark is above the pool level some 6 or 8 feet, and attempted to prove this by the Weather Bureau records. A number of tables and charts prepared from Weather Bureau data were introduced as exhibits and from these what seemed to be periods of "ordinary" low water were pointed out. Principal among the data prepared were the average river stages and the average rainfall for the last 20 years, by months and seasons; five tables and charts showing the percentage of days in 20 years when the 7 a. m. river gage reading was at or above certain levels; a table and chart exhibiting all the dry spells (spells of 21 days or longer with 0.25 inch or less of precipitation) at Nashville, 1871 to 1924.

The verdict of the jury was in favor of the defendant, and was equivalent to saying that it had been shown that the "ordinary low-water mark" on the banks involved in the suit corresponded to 12 to 14 feet on the Nashville river gage. This would be 5.5 to 7.5 feet above minimum pool stage, which is 6.5 feet.

METEOROLOGY AND DESERT ROAD-BUILDING

The recently completed construction of the so-called "Wendover Cut-off," which consisted in part of a road fill some 40 miles long across Great Salt Lake Desert west of Salt Lake City, Utah, involved certain important adjustments of road-building methods to meteorological conditions, as suggested by the following extract from Engineering News Record of April 23, 1925.

* * * That portion of the cut-off of about 40 miles crossing the alkali mud flats and salt crust is all that called for unusual methods. This mud flat and the salt crust * * * are the sediment of a geological lake. The mud flat is about 80 miles long and half as wide. In this flat * * * is the island of salt, about 6½ miles wide where the road crosses. The salt crust varies from a few inches thick at the edges to 4 feet thick in the middle. In the summer, or the dry season, the water table over a large area is about at mud-surface level. In winter this area is covered with water up to a foot or so in depth, varying with the precipitation and as the winter is open or severe. This sheet of water shifts with the wind. A north wind of much duration will pile up the water at the south end of the "lake" and virtually lay dry the road location. With a shift of wind the piled-up water comes flooding back and submerges the highway location sometimes several inches deeper than normal. * * * The clay used in the embankment * * * was a very fine-grained material * * *. When this mass became saturated it held a considerable amount of moisture * * *. After the salt cuts were made and the underlying clay thrown up in windrows along the line of the embankment it took considerable time for the surface to dry out sufficiently to permit a caterpillar and grader to work upon it. The hot sun working on this mass for weeks would not dry it out to exceed a depth of a quarter of an inch. It was demonstrated that wind was more effective than the rays of the sun.

THE INCREASING RUNOFF FROM THE AVOCA BASIN (DUE APPARENTLY TO DEFORESTATION)[15]

BY E. T. QUAYLE, B. A.

Formerly the stream bed of the Avoca River, a small stream in southeastern Australia near Melbourne, was characterized by many large water holes, many of which were 20 to 40 yards long, 10 to 15 wide, and 8 to 10 feet deep.

[15] Proc. Royal Soc. Victoria, Vol. XXXV, new series.

For 30 years, or up to the early nineties, the changes in the channel were not particularly noticeable, but during the last decade or two they have become very marked.

Changes in the vegetable cover of the basin began with the destruction by stock of the coarse grasses and trees which lined the river bed. With this destruction the cutting of the channel began. This gradually lowered the level of the water in the water holes and now, in most cases, has almost completely drained them. When the flow is rapid a fairly deep and uniform channel is eroded, but so far as seen by the author no lateral erosion has occurred.

Precise data as to the extent of timber cutting do not seem to be available. The author confines his remarks to what he has personally observed and he notes that "it is common knowledge in that district [the basin of the Avoca] that the clearing of the timber has most strikingly improved the summer flow of the stream by increasing the activity and duration of the springs."

He recalls the fact that a certain stream which was formerly dry for the greater part of the season is now a permanent stream; that even in April, 1922, it was discharging 5 c. f. per minute.

Statistics of the average minimum flow in c. f. s. for the 20 years 1890–1910 are compared with similar statistics for 1910–1919. This comparison shows that the average minimum discharge of the latter period is from two to ten times greater than formerly, while there has not been any special increase in the rainfall.

The official gaugings of the flow of the river over Coonooer wier show that the volume as well as the constancy of the stream flow is increasing greatly.—*A. J. H.*

METEOROLOGICAL SUMMARY FOR JUNE, 1925, FOR CHILE AND ARGENTINA

[Reported by Señor Julio Bustos Navarrete, El Salto Observatory, Santiago, Chile]

In June, 1925, the weather was rather rainy in the southern part of South America; there were two important periods of cyclonic disturbance—7th to 15th and 21st to 28th.

From the 1st to the 6th the atmospheric condition was characterized by the presence of a marked anticyclone over the south-central part of the continent, which caused severe cold waves invading the central valley of Chile as far as Santiago and the central pampas of Argentina as far as Cordoba. High pressure prevailed repeatedly over Argentina from the Province of Buenos Aires northward.

On the 7th an important depression was approaching from the west in latitude 45° south; on the following day it began to manifest its influence in the southern region, bringing strong winds and rain in the southern Provinces of Chile. Another depression appeared in latitude 40° south on the 10th, and on the next day its influence was shown in the occurrence of rain from Aconcagua southward to Chiloe. On the 12th the center of this low pressure area had moved to a position off Cabo Raper and during the next three days it advanced across the region of Magellanes in a course toward the South Shetland and South Orkney Islands and entered the frozen antarctic sea.

A rather important depression present in the Province of Rio Negro, Argentina, on the 10th was accompanied by rains extending southward as far as Puerto Madryn.

Between the 16th and the 20th an important anticyclonic center was formed in the south-central part of

the continent and as in the preceding case this brought a period of severe cold in Chile and Argentina.

On the 21st a cyclonic disturbance approached from the west in latitude 47° south, and on the 22d there followed another in latitude 37° south, a little to the south of the Juan Fernandez Islands, and then on the following day these two formations were separated by a region of relative high pressure with divergent winds in Chiloe. These formations united on the 24th to form a great cyclone in accord with the laws of Guilbert. During the period from the 25th to the 28th this cyclonic disturbance moved southward, its path passing near the South Shetland and South Orkney Islands into the antarctic sea. All of this period was characterized by heavy storms of rain and wind in southern Chile.

There was a rise in pressure and a return to the anticyclonic weather type during the last two days of the month.

ON THE CHANGES OF TEMPERATURE IN THE LOWER ATMOSPHERE, BY EDDY CONDUCTION AND OTHERWISE

By Prof. S. CHAPMAN, F. R. S.

[Reprinted from the Meteorological Magazine, March, 1925, pp. 34-35]

"It has long been recognized that the daily variation of temperature is due in the main to the heating of the atmosphere by the ground. The process is not completely understood, however. The temperature records which are kept at various heights on the Eiffel Tower provide material for investigating the flow of heat from one level to another. The material has been utilized by G. I. Taylor and by W. Schmidt. Professor Chapman is not satisfied that the results obtained by these workers tell the whole story, and he has made a closer analysis of the statistics. He finds that "eddy conductivity," the only agency considered by Taylor, will only account for half the heat which reaches the upper levels. The conclusion is that radiation plays a more important part than had been suspected. It was urged in the discussion that the methods adopted in the paper did not take account of convection. However that may be, it is clear that there is room for further study of the familiar phenomena of the daily temperature change."

THE HUMBOLDT CURRENT RETURNS TO NORMAL[17]

[Reprinted from Maritime Register of June 10, 1925]

Capt. George S. Dexter, of the Grace liner *Santa Luisa*, reports that the Humboldt Current is getting back to its normal position off the coast of South America after being temporarily shifted offshore by El Niño.

Birds and fish, however, are still fewer in number than formerly. Captain Dexter sailed from Valparaiso May 13, 1925.—*A. J. H.*

[17] See March, 1925, REVIEW, p. 116.

WEATHER BUREAU STAFF MEETINGS, 1924-25

The regular biweekly meetings of the scientific and technical staff of the Central Office of the United States Weather Bureau, initiated in the autumn of 1923,[18] were continued on the same plan during the winter of 1924–25.

The following is a list of the discussions that were held (asterisks denote speakers from outside the bureau):

September 4, 1924

*M. A. GIBLETT: The organization and work of the British Meteorological Office.

*J. BJERKNES: The forecast work of the Bergen Institute, Norway.

October 8, 1924

W. J. HUMPHREYS: Report on meteorological papers read before the Toronto meeting of the British Association for the Advancement of Science and the International Mathematical Congress.

W. R. GREGG: Report on the meeting of the National Aeronautical Association at Dayton, Ohio.

October 22, 1924

*S. J. MAUCHLY: Atmospheric Electricity.

November 5, 1924

*FRANK M. PHILLIPS: Atmospheric Conditions and Comfort.

November 19, 1924

H. H. KIMBALL: Report on the Madrid meeting of the International Union of Geodesy and Geophysics.

December 3, 1924

W. R. GREGG: A review of the recent investigations, by J. H. Field and W. A. Harwood, on the free atmosphere over India.

December 17, 1924

A. J. Henry: Hawaiian Rainfall.

January 14, 1925

*C. G. ABBOT: Results of the Solar Constant determinations at Mt. Harqua Hala, Arizona, and Mt. Montezuma, Chile.

January 28, 1925

*L. W. Austin: Atmospheric disturbances of radiotelegraphy.

February 11, 1925

*F. B. LITTELL: Observations of the total eclipse of January 24, 1925, made from the dirigible *Los Angeles*.

*H. L. CURTIS: Observations of the shadow bands during the total eclipse of January 24, 1925.

W. J. HUMPHREYS: Observations of shadow bands during the total eclipse of January 24, 1925, communicated to the United States Weather Bureau.

February 25, 1925

A. J. HENRY: How shall we define a "cold winter"?

E. W. WOOLARD: The mean variability in random series.

March 11, 1925

C. F. MARVIN and H. H. KIMBALL: The alleged fluctuations of the intensity of solar radiation, and their correlation with the weather.

March 25, 1925

W. W. REED: Foreign Climatic Statistics.

April 8, 1925

*W. ELMER EKBLAW: Northwest Greenland.

April 22, 1925

W. J. HUMPHREYS: Colloidal Meteorology.

May 13, 1925

F. G. TINGLEY: Ocean Temperature Data as collected by the U. S. Weather Bureau.

May 27, 1925

C. F. MARVIN: Present status of the problem of solar radiation and weather forecasting.

Discussion, both formal (prepared beforehand) and informal, followed the presentation of all the above papers.

—*Edgar W. Woolard, secretary.*

[18] See MONTHLY WEATHER REVIEW, 1924, 52: 35-36; 166.